APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,880	03/04/2002	Mayan Moudgill	YOR9-2001-0204US1 (8728-	6258

22150	7590	05/09/2006

EXAMINER
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ART UNIT	PAPER NUMBER
2181	

DATE MAILED: 05/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/087,880	MOUDGILL, MAYAN
	Examiner	Art Unit	
	Henry W.H. Tsai	2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>03 February 2006</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-15,18 and 19* is/are pending in the application.

    4a) Of the above claim(s) __ is/are withdrawn from consideration.

5)☒ Claim(s) *1,4-9,15,18 and 19* is/are allowed.

6)☒ Claim(s) *10-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on __ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs

of 35 U.S.C. 102 that form the basis for the rejections under

this section made in this Office action:

    A person shall be entitled to a patent unless –

    (e) the invention was described in (1) an application for patent,
    published under section 122(b), by another filed in the United States
    before the invention by the applicant for patent or (2) a patent granted on
    an application for patent by another filed in the United States before the
    invention by the applicant for patent, except that an international
    application filed under the treaty defined in section 351(a) shall have the
    effects for purposes of this subsection of an application filed in the
    United States only if the international application designated the United
    States and was published under Article 21(2) of such treaty in the English
    language.

2.   Claims 10, and 11 are rejected under 35 U.S.C. 102(e) as

being anticipated by Tremblay et al. (U.S. Patent Application

Publication No. 2001/0042190) (hereafter referred to as Tremblay

et al.'190).

    Referring to claim 10, Tremblay et al.'190 discloses, as

clamed, a system for processing an instruction in a

microprocessor, comprising: a plurality of clusters (<u>MFU1 622,

MFU2 624, MFU3 626, and GFU 620, see Fig. 6</u>) having at least one

functional unit (see Paragraph 0064, lines 4-6) for executing

the instruction; and a plurality of register files (610, 61,

614, and 616, see Fig. 6) having a predetermined number of

physical registers (96 global registers and 32 local register,

see Fig. 6) to and from which data is written and read in

accordance with the instruction, wherein each of the register

files (610, 61, 614, and 616, see Fig. 6) has one write port

(the write port for the corresponding 32 local register in each

register file, see Fig. 6, and see also paragraph 0064, lines

14-16, regarding that the local registers are read and written

only by a functional unit associated with a particular register

file segment) to which an output of a corresponding cluster

(MFU1 622, MFU2 624, MFU3 626, and GFU 620, see Fig. 6) is

connected, and data write operation in accordance with the

instruction executed by the at least one functional unit (see

Paragraph 0035, lines 9-13) is performed by accessing the

physical registers of the plurality of register files, and

wherein each of the plurality of register files (610, 61, 614,

and 616, see Fig. 6) has at least one read port (the read port

for the corresponding 96 global register in each register file,

see Fig. 6, and paragraph 0064, lines 13-14, regarding that the

global registers are read and written by all functional units)

from which any of the plurality of clusters can read data (see

paragraph 0064, lines 13-14, regarding that the global registers
are read and written by all functional units).

As to claim 11, Tremblay et al.'190 also discloses: the at
least one cluster includes multiple functional (MFU1 622, MFU2
624,and MFU3 626, see Fig. 6, see also paragraph 0035, lines
11-17, regarding the MFU (media functional unit) is multiple
single-instruction-multiple-datapath (MSIMD) media function
units) each for executing different instructions.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which
forms the basis for all obviousness rejections set forth in this
Office action:

> (a) A patent may not be obtained though the invention is not
> identically disclosed or described as set forth in section 102 of this
> title, if the differences between the subject matter sought to be
> patented and the prior art are such that the subject matter as a whole
> would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the
> invention was made.

4.   Claims 12-14 are rejected under 35 U.S.C. 103(a) as being
unpatentable over Tremblay et al.'190 in view of Levy et al.

(U.S. Patent Application Publication No. 2001/0004755)

(hereafter referred to as Levy et al.'755).

Tremblay et al.'190 discloses the claimed invention except

for: means for renaming architectured registers of the

instruction with the physical registers of each of the plurality

of register files (claim 12);

the architected registers are target registers in which a

result of the instruction is stored (claim 13); and

at least one issue-queue units associated with the

plurality of the clusters, an issue-queue unit for holding

instruction renamed by the means for renaming until the

instruction is issued to be executed (claim 14).

Levy et al.'755 shows: means for renaming architectured

registers (Register Handler 28, see Fig. 9) of the instruction

with the physical registers of each of the plurality of register

files;

the architected registers (such as Ar1 and AR2 in Fig. 9)

are target registers in which a result of the instruction is

stored; and

at least one issue-queue units (see FP instruction queue

32; and Integer instruction queue 30 in Fig. 1) associated with

the plurality of the clusters, an issue-queue unit (see FP

instruction queue 32; or Integer instruction queue 30 in Fig. 1)

for holding instruction renamed by the means for renaming

(Register Handler 28, see Fig. 9) until the instruction is

issued to be executed (see EXEC stage 54 in Fig. 2) in one of

the plurality of clusters.

Tremblay et al.'190's system does not explicitly show using

renaming registers. Register reference delay is a bottleneck in

the system using a lot of registers inside the register files.

Using the renaming registers for dynamic instruction scheduling

and dynamic allocating the registers will significantly improve

the Tremblay et al.'190's system performance.

It would have been obvious to one having ordinary skill in

the art at the time the invention was made to modify Tremblay et

al.'190's system to comprise: means for renaming architectured

registers of the instruction with the physical registers of each

of the plurality of register files (claim 12); the architected

registers are target registers in which a result of the

instruction is stored (claim 13); and at least one issue-queue

units associated with the plurality of the clusters, an issue-

queue unit for holding instruction renamed by the means for

renaming until the instruction is issued to be executed (claim

14), as taught by Levy et al.'755, in order to facilitate

dynamic instruction scheduling for reorder or parallel

operations to increase the processor performance for the

Tremblay et al.'190's system (see paragraph 0003, lines 1-3, and

lines 8-11).

Allowable Subject Matter

5.   Claims 1, 4-9, 15, 18, and 19 are allowed.

6.   The following is a statement of reasons for the indication

of allowable subject matter: Tremblay et al.'190 and Levy et

al.'755, the closest references, and the other prior art do not

teach or fairly suggest: each of the register sub-files is

associated with a corresponding one of the clusters (in claim 1,

and claim 15 recites the corresponding limitation). Further the

combination of the above limitations with all of the other

limitations in the respective independent claims is not obvious.

Response to Amendment

7.   Applicant's arguments filed 2/3/06 have been fully

considered but they are not deemed to be persuasive.

Applicant argues that "although the global registers can be

read from and written to by all functional units, the local

registers can be read from and written to by only the functional

unit associated with the particular register file segment. Thus,

Tremblay includes register segments that cannot be read by any

of the plurality clusters, contrary to the recitation of claim

10." (page 7, last three lines and page 8, lines 1-2)   Examiner

disagrees with Applicants. *Note "the local registers can be*

read from and written to by only the functional unit associated

with the particular register file segment" does not mean

"Tremblay includes register segments that cannot be read by any

of the plurality clusters, contrary to the recitation of claim

10". Applicant's argument is moot.

As set forth in the are rejection above, Tremblay et

al.'190 discloses: each of the register files (<u>610, 61, 614, and</u>

<u>616, see Fig. 6</u>) has one write port (<u>the write port for the</u>

<u>corresponding 32 local register in each register file, see Fig.</u>

<u>6, and see also paragraph 0064, lines 14-16, regarding that the</u>

<u>local registers are read and written only by a functional unit</u>

<u>associated with a particular register file segment</u>) to which an

output of a corresponding cluster (<u>MFU1 622, MFU2 624, MFU3 626,</u>

<u>and GFU 620, see Fig. 6</u>) is connected, and data write operation

in accordance with the instruction executed by the at least one

functional unit (<u>see Paragraph 0035, lines 9-13</u>) is performed by

accessing the physical registers of the plurality of register

files, and wherein each of the plurality of register files (<u>610,</u>

<u>61, 614, and 616, see Fig. 6</u>) has at least one read port (<u>the</u>

<u>read port for the corresponding 96 global register in each</u>

<u>register file, see Fig. 6, and paragraph 0064, lines 13-14,</u>

<u>regarding that the global registers are read and written by all</u>

<u>functional units</u>) from which any of the plurality of clusters

can read data (<u>see paragraph 0064, lines 13-14, regarding that</u>

<u>the global registers are read and written by all functional</u>

<u>units</u>). Tremblay et al.'190 anticipates the claimed invention.

Conclusion

8.   This is a RCE of applicant's earlier Application No.

10/087,880. All claims are drawn to the same invention claimed

in the earlier application and could have been finally rejected

on the grounds and art of record in the next Office action if

they had been entered in the earlier application. Accordingly,

THIS ACTION IS MADE FINAL even though it is a first action in

this case. See MPEP § 706.07(b). Applicant is reminded of the

extension of time policy as set forth in 37 CFR 1.136(a).

    A shortened statutory period for reply to this final action

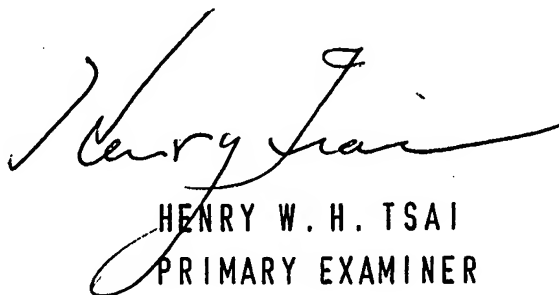is set to expire THREE MONTHS from the mailing date of this

action. In the event a first reply is filed within TWO MONTHS

of the mailing date of this final action and the advisory action

is not mailed until after the end of the THREE-MONTH shortened

statutory period, then the shortened statutory period will

expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated

from the mailing date of the advisory action. In no, however,

event will the statutory period for reply expire later than SIX

MONTHS from the mailing date of this final action.

Contact Information

9.   Any inquiry concerning this communication or earlier

communications from the examiner should be directed to Dr. Henry

Tsai whose telephone number is (571) 272-4176. The examiner can

normally be reached on Monday-Thursday from 8:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful,

the examiner supervisor, Fritz M. Fleming, can be reached on

(571) 272-4145. Any inquiry of a general nature or relating to

the status of this application or proceeding should be directed

to **the TC central telephone number, 571-272-2100.**

10. In order to reduce pendency and avoid potential delays,
Group 2100 is encouraging FAXing of responses to Office actions
directly into **the Group at fax number: 571-273-8300.** This
practice may be used for filing papers not requiring a fee. It
may also be used for filing papers which require a fee by
applicants who authorize charges to a PTO deposit account.
Please identify the examiner and art unit at the top of your
cover sheet. Papers submitted via FAX into Group 2100 will be
promptly forward to the examiner.

HENRY W. H. TSAI

PRIMARY EXAMINER

May 1, 2006